

## Fully Integral, Flexible Composite Driveshaft, Phase II

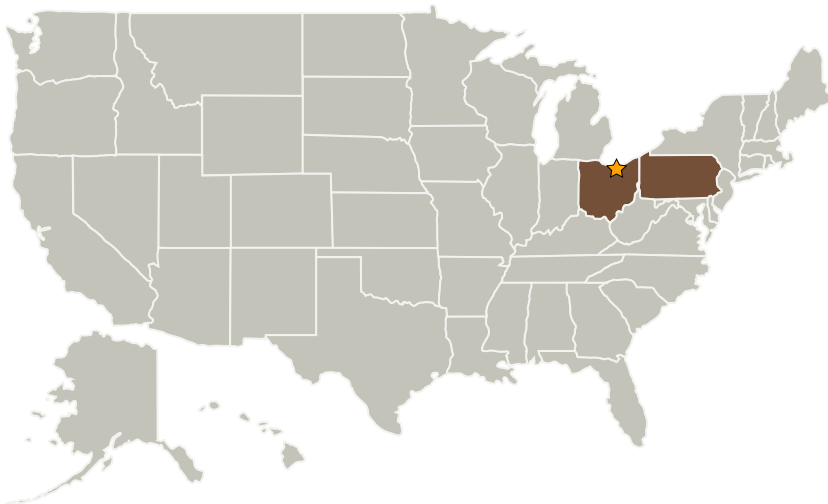
Completed Technology Project (2009 - 2012)



## Project Introduction

An all-composite driveshaft incorporating integral flexible diaphragms is described and proposed for phase II prime contractor testing. The approach obsoletes the split lines required to attach metallic flex elements and either metallic or composite spacing tubes in current solutions. Sub-critical driveshaft weights half that of incumbent technology are achievable for typical rotary wing shaft lengths. Spacing tubes are described, which comprise an integral part of the initial tooling but which remain part of the finished shaft and control natural frequencies and torsional stability. A concurrently engineered manufacturing process and design for performance is described which competes with incumbent solutions at significantly lower weight and with the probability of improved damage tolerance and fatigue life. This phase II proposal seeks to produce additional fatigue test articles to supplement the pair of shafts provided during phase I for static evaluation. The phase II effort will also support the prime contractor test program designed to raise Technology Readiness Level to 6-7.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Lawrie Technology, Inc.	Supporting Organization	Industry	Girard, Pennsylvania



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Glenn Research Center (GRC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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### Primary U.S. Work Locations

Ohio

Pennsylvania

### Project Transitions



**January 2009:** Project Start



**January 2012:** Closed out

### Project Management

#### Program Director:

Jason L Kessler

#### Program Manager:

Carlos Torrez

### Technology Areas

#### Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.4 Manufacturing
    - └ TX12.4.6 Repurpose Processes